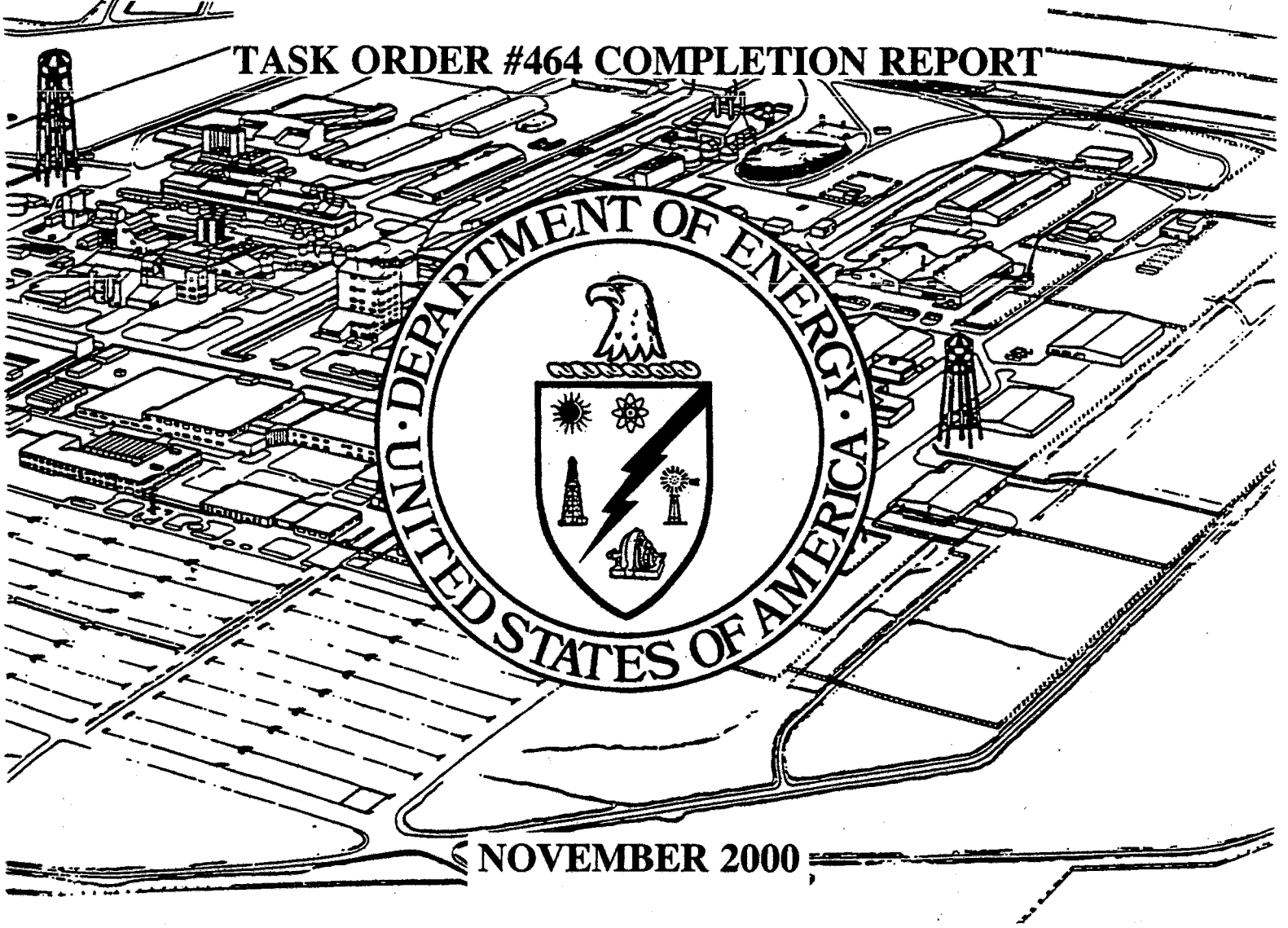
3384

OPERABLE UNIT 3

MISCELLANEOUS SMALL STRUCTURES DECONTAMINATION AND DISMANTLEMENT PROJECT

TASK ORDER #464 COMPLETION REPORT



NOVEMBER 2000

FERNALD ENVIRONMENTAL MANAGEMENT PROJECT
FERNALD, OHIO

U. S. DEPARTMENT OF ENERGY
FERNALD AREA OFFICE

DOCUMENT CONTROL NO. 1751-RP-0005 (REV. 0)

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1.0 INTRODUCTION

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Task Order #464 was implemented under the authority of the Miscellaneous Small Structures (MSS) Implementation Plan for Above-Grade Decontamination and Dismantlement (D&D) (DOE 1998) and the Task Order implementation schedule provided to the regulatory agencies on May 10, 2000. Task Order #464 included the D&D of the following components:

- Component 2E – NFS Storage Tanks
- Component 28A – Security Building
- Component 28B – Industrial Relations Building
- Component 28N – Main Gate Guard Post

Remediation of the four components included in Task Order #464 was performed successfully and in accordance with approved project planning and design requirements. This Task Order Completion Report summarizes remediation activities for four particular components performed during the summer and fall of 2000. A final Project Completion Report for the MSS Project will include summaries of this Task Order and other Task Orders implemented under the MSS Project following completion of the overall MSS Project.

2.0 COMPONENT-SPECIFIC REMEDIATION SUMMARY

Preparatory actions to the four components, facility shutdown, removal of drummed hold-up material, utility disconnections and isolation were performed on each. Preparatory actions were summarized in the MSS Implementation Plan.

RCRA/CERCLA integrated closure of Hazardous Waste Management Unit (HWMU) No. 46 – UNH Storage Tanks, NFS Area was successfully performed under the scope of Task Order #464. Since this HWMU does not have soil contamination requiring further remediation (Re: Table 3-10, Operable Unit 3 Integrated Remedial Design/Remedial Action Work Plan, May 1997), this report formally closes the unit. The Fernald Environmental Management Project (FEMP) will remove posted signs/barriers, stop inspections and remove the HWMU from the FEMP's RCRA Part A/B Permit Application. Salient details of the integrated HWMU closure field activities are reported in Section 2.5 of this document.

A chronology of the D&D field activities under Task Order #464 is provided in Table 2-1.

TABLE 2-1 Task Order #464 D&D Chronology

Component	Field Initiation	Field Completion
Main Gate Guard House (28N)	5/31/00	6/7/00
NFS Storage and Pump House (2E)	6/7/00	7/31/00
Industrial Relations Building (28B)	6/7/00	11/8/00
Security Building (28A)	8/28/00	11/8/00

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2.1 Component 2E - Nuclear Fuel Services Storage and Pump House

The Nuclear Fuel Services (NFS) Storage and Pump House were located in the radiologically controlled area on the northeast corner of 2nd and "A" Streets, just south of the former Plant 1 Ore Silos (1C). The pump house was a cinder block building with a concrete floor and ceiling that measured approximately 15 ft. x 16ft. x 10 ft. The four horizontal storage tanks (F2-605, 606, 607 and 608) measured 10.5 ft. in diameter x 44 ft. long. These tanks were situated in a concrete containment area measuring 62 ft. x 54 ft. and designated as a HWMU (see Section 2.0). A steel shield at the north end of the tank area protected the tanks during D&D of the Plant 1 Ore Silos.

The asbestos insulated pipe/pipe fittings were abated in accordance with the Project Work Scope Condition/Specification for asbestos removal, which is consistent with Site Procedure CT-4.2.1, "Asbestos Abatement" and the MSS Implementation Plan.

Asbestos block insulation was found to exist on each of the tank end caps. Containment areas were erected around the end caps and negative pressure air was maintained in each containment for the duration of asbestos abatement. The asbestos block insulation was abated in accordance with the Project Work Scope Condition/Specification for asbestos removal.

Asbestos containing material was found to exist in the built-up roof of the Pump House. The asbestos containing material was abated in accordance with the Project Work Scope Condition/Specification for asbestos removal.

All asbestos containing material was double wrapped and placed in roll-off boxes for disposition into the On Site Disposal Facility.

The equipment/systems dismantlement activities were completed prior to the structural dismantlement.

The concrete/masonry walls and concrete slab ceiling of the Pump House were demolished to meet the Waste Acceptance Criteria and placed into roll-off boxes for disposition into the On Site Disposal Facility.

The concrete walls of the pump house, steel shield, the catwalk between Tanks #2 and #3 and the associated piping connected to the Tanks and Pump House was dismantled using a hydraulic shear. The stainless steel tanks were dismantled using plasma arc torch cutting system. Metal debris from the tanks, steel shield, catwalk and associated piping was placed in roll-off boxes for placement into the On-Site Disposal Facility.

2.2 Component 28A – Security Building

The Security Building (28A) was an irregularly shaped, single-level structure measuring 109 ft. x 82 ft. x 10 ft. It was located south of the Health and Safety Building and constructed of cinder block walls supported on reinforced concrete footers with poured concrete floors. The Security Building included a turnstile area that separated it from the Industrial Relations Building.

The asbestos insulated pipe/pipe fittings, asbestos floor tile and asbestos mastic were abated in accordance with the Project Work Scope Condition/Specification for asbestos removal, which is consistent with Site Procedure CT-4.2.1, "Asbestos Abatement" and the MSS Implementation Plan.

All asbestos containing material was double wrapped and placed in roll-off boxes for disposition into the On Site Disposal Facility.

Encapsulant spray was applied to the Security Building roof to ensure containment of the fixed contamination areas as described in the Implementation Plan.

Building 28A was dismantled using a trackhoe-mounted shear and continuous application of water spray to eliminate any potential for fugitive emissions. The cinder block building and turnstile area was demolished and placed in roll-off boxes for disposition into the On Site Disposal Facility.

2.3 Component 28B – Industrial Relations Building

The Industrial Relations Building (28B), also known as the Human Resources Building, was a single story building located adjacent and to the west of the Security Building. This building was irregularly shaped with approximate dimensions of 80 ft. x 100 ft. x 10 ft. The building construction was a combination of concrete and cinder blocks.

The mold-contaminated debris was removed prior to the structural demolition. The debris was wetted during removal, segregated into roll-off boxes double lined with six mil poly bags and labeled as "special concern-mold contamination". The remaining structural debris (concrete, structural steel) was sprayed with a bleach solution prior to opening the building to the environment.

Approximately 150 linear ft. of additional asbestos pipe insulation was discovered above the false ceiling in the Industrial Relations Building. The asbestos insulated pipe/pipe fittings, asbestos floor tile and asbestos mastic were abated in accordance with the Project Work Scope Condition/Specification for asbestos removal, which is consistent with Site Procedure CT-4.2.1, "Asbestos Abatement" and the MSS Implementation Plan.

All asbestos containing material was double wrapped and placed in roll-off boxes for disposition into the On Site Disposal Facility.

Encapsulant spray was applied to the Industrial Relations Building roof to ensure containment of the fixed contamination areas.

Building 28B was dismantled using a trackhoe-mounted shear and continuous application of water spray to eliminate any potential for fugitive emissions. The concrete and cinder block building was demolished and placed in roll-off boxes for disposition into the On Site Disposal Facility.

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2.4 Component 28N – Main Gate Guard Post

The Main Gate Guard Post (28N) was a single story structure located immediately east of the Security Building (28A). This building was uniformly shaped with approximate dimensions of 6 ft. x 6 ft x 8 ft. and constructed of cinder block walls from grade to a height if four feet with metal framed windows, and roof above.

Encapsulant spray was applied to the Main Gate Guard Post roof to ensure containment of the fixed contamination.

The building was demolished using a backhoe and placed in roll-off boxes for disposition into the On Site Disposal Facility.

2.5 HWMU No. 46 Decontamination

Based on an evaluation by process knowledge and facility records of HWMU No. 46 during remedial design, it was determined that no further decontamination of the storage tanks and piping would be required because the tanks and associated piping were decontaminated following removal of the UNH, as reported in the RvA 20 Final Report, October 1996.

The strategy for HWMU decontamination of the concrete secondary containment pad included sampling and analysis of containment pad rainwater. Prior to commencement of the D&D activities for Component 2E, a sample of rainwater contained in the unit sump was collected. This sample was analyzed for corrosivity, barium, chromium, lead and mercury in accordance with the Implementation Plan and Sampling Plan.

Results of rainwater sampling of HWMU No. 46 revealed that the Ohio EPA Closure Guidance Limit for lead, barium, chromium and mercury were met for the concrete secondary containment. Rainwater sampling results relative to the closure of HWMU No. 46 are provided in Table 2-2.

TABLE 2-2 Results of HWMU No. 46 (Component 2E) Rainwater Sampling

Location	Sample ID	Lead ppb	Barium ppb	Chromium ppb	Mercury ppb	pH
2E Containment Pad	2EM-01	21.3	288	15.5	0.01	NA
2E Containment Pad	2EPH-01	NA	NA	NA	NA	7.42
OEPA Closure Guidance Limits	NA	600	1000	1000	3	NA

2.6 Component 28A/28B Area Restoration

Since Component 28Aand 28B were located in a highly visible location, area restoration began once the debris loading activities were completed. Restoration included the following tasks:

- Restoration of the open picnic area west of Component 28B.
- Filling the 28B mechanical room pit with non-contaminated material.

- Filling the Component 28A electrical chase with non-contaminated material.
- Removal of damaged shrubs and vegetation.
- Grading/filling of all damaged areas caused by heavy equipment activities.
- Grade, level, topsoil and seeding the damaged vegetation area.
- Permanent fence installation around the remaining 28A/28B slab.

3.0 MATERIAL MANAGEMENT

A summary of debris/waste generation from the four components remediated under Task Order #464 is summarized in Table 3-1.

TABLE 3-1 Summary of Debris/Waste Generated

Debris Category & Description)	Profile/ Inventory Nos.	Volume (yd^3)	Container[a]/ Quantity	Current Storage Location	Disposition
Cat. A/B/D/E (Metals, Incidental Concrete)	92101	930	ROB (32)	Placed in OSDF or at North Stockpile for Future OSDF Placement	OSDF
Cat. E (Concrete)	922007	1,433	ROB (95)	Placed in OSDF or at North Stockpile for Future OSDF Placement	OSDF
Cat. H (Asbestos)	95006	77	ISO (3)	Plant 1 Pad	OSDF
Cat I-4 (Misc. Debris)	943101	350	ROB (12)	Placed in OSDF or Staged at the Boiler Plant Footprint	OSDF
Cat. 1-2 (Misc. Debris)	923101	8	ROB (1)	Staged at the Boiler Plant Footprint	OSDF
Category 4 Material	94000	120	ROB (5)	OSDF	OSDF
Mold Contaminated Debris	95022	85	ROB (3)	OSDF	OSDF
Cat. G-2 (Non-regulated ACM)	921961	305	ROB (1)	Plant 1 Storage Pad	OSDF

Footnote:
(a) ROB: Roll-off Box; ISO: Sea Land Container.

In addition, seventeen drums of hold-up material from the NFS Storage Tanks were removed from the NFS pad and transported to the Plant 1 Pad. Drum access and removal from the NFS pad was completed once NFS piping was demolished to eliminate interference.

4.0 LESSONS LEARNED

Implementation of Task Order #464 revealed a number of lessons-learned to D&D Project Management. The following list identifies items that will be considered prior to implementing the next Task Order under the MSS Project, while also providing potential process improvements for larger scale D&D projects at the FEMP.

- As a precaution, the project team requested that a visual evaluation of the NFS Tanks be performed prior to demolition. This precaution was taken since Removal Action 12 (Safe Shutdown activities) did not allow for processing (which included rinsing) and tank access by Safe Shutdown was limited to the manway. Visual inspection of the tanks revealed that material was present at the bottom of each tank. As a result, Non-Destructive Assay (NDA) testing was done to determine the U concentration and enrichment of material. Confirmation samples were taken to validate the NDA results. As a preparatory activity, Facilities Shutdown cut holes in the sides of each tank and removed the material using scrapers and shovels. A total of seventeen 55-gallon drums were filled with the solid residue.

- The alarming real-time monitor is a good instrument for monitoring nitrogen dioxide, but the elevated sound levels generated by the plasma torch make the instrument alarm difficult to hear. The instrument should not be relied upon to warn workers of an alarm condition in a high noise environment unless it has been modified with either a visual or vibratory indicator.

- When multiple work groups use a personnel decontamination facility, it is very important to educate the other work groups of the procedures being used by the asbestos workers. By meeting with these groups ahead of time, it can be beneficial to the overall success of the asbestos abatement activity.

- The NFS Tanks were constructed of ½" thick stainless steel. The original plan was to D&D the tanks with the shear. After 2 days of cutting a tank with minimal progress, an alternate plan was implemented. Plasma arc torch cutting was implemented. The shift in plan required a major change in operations. All project documentation was changed, new health and safety requirements were implemented, and workers were briefed.

- Torch cutters were required to use supplied breathing air due to the nitrogen dioxide (NO_2) emitted as a result of the torch gases and the high radiological contamination on the interior of the tank surfaces.

- Noise was an issue and workers were required to wear double hearing protection (earplugs and earmuffs) when plasma cutting. The tank super structures were used as the containments.

- Flexible hoses from HEPA AFDs were attached to the manway of each tank. The AFDs pulled the gases and radiological contamination away from the torch cutter and the open environment into the tank and through the HEPA filter.

- An additional HEPA AFD was located outside the tank to provide ventilation at the location where the torch cuts were being made.

- In order to meet the OSDF WAC, the tanks were cut into 10' x 4' sections. In order to maintain the integrity of the tanks, the cutters left tabs at the corners of each section. After all cuts were made, the shear was able to apply pressure and pop the sections free.

- In order to support the supplied air machine and torch cutting operations, additional equipment was needed. A portable breathing air compressor, an air compressor to power the plasma cutters and multiple portable generators were obtained..

- After 3 days of replanning and set-up, torch cutting operations began. During the first 2-3 days of cutting, equipment failure was reported several times. Since all equipment had to work together, failure of one piece of equipment shut the job down. The project arranged for a redundancy on all equipment. A second plasma cutter was purchased to increase the cutting process (this second unit replaced the initial plasma cutter provided by Maintenance.

- While the breathing air machine was operational, a full time, qualified and trained individual was required to monitor the machine. The project did not have anyone available. The project reached out and matrixed several individuals from other projects to man the machine while existing project team members were trained. In summary, the project could have saved more than two weeks if the alternate plan of torch cutting had been identified up front and planned.

- Since the Industrial Relations Building was abandoned in place due to the roof collapse, significant mold contamination was present on most debris (carpet, drywall, ceiling tile) which required a change in D&D methodology. Air sampling conducted for airborne mold spores during the demolition of the Industrial Relations Building indicated very high levels of airborne mold spores in the building. If there would ever be another building on site that would be in this condition (severe mold contamination), it would be advisable to wet all building surfaces with a 5 to 1 water/bleach solution to help reduce the worst case airborne mold levels.

- During the planning process, it was determined that area restoration would be required after demolition was complete. However, the exact nature of the restoration would not be identified until after structural demolition due to the unknown conditions of the slabs and surrounding concrete after shearing. It was determined that the slabs and concrete in the turnstile area were not suitable for pedestrian traffic. Therefore, a fence was placed around the slabs. In addition, the pits were filled with clean compactible materials and all grassy areas were brought back to their original condition with topsoil, seed, and straw.

The following list identifies items that were considered prior to implementing this Task Order under the MSS Project as a result of previous D&D Lessons Learned issues:

- The D&D Team were comprised of representatives from all functional areas and support organizations.

- A project schedule was developed and integrated with logic ties to between functional area activities.

- Action items for all functional areas and support organizations were developed. Each action item was assigned to the responsible team member with a due date Each action item was tied to the corresponding project schedule activity.

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- Team meetings were held weekly to status the project schedule, status action items, and discuss issues. Breakout sessions were held immediately after the team meetings to resolve issues on a real time basis.

- A Fluor Fernald, Inc. Public Affairs Representative was a project team member responsible for ensuring various communications were published on a weekly basis to keep the stakeholders briefed on the project activities and impacts to the site.

- Approximately 100 feet of friable asbestos pipe insulation was found hidden above the plaster ceiling in the Industrial Relations Building. The insulation was on a cold water line (which supplied water to the two drinking fountains) and was not apparent during the initial building inspections because the location where the piping went into the ceiling was hidden above the dropped ceiling grid. The possibility of hidden piping above the ceiling will need to be evaluated when planning future building demolitions in the Administrative area.

- The Security Building vault was constructed of 18" thick hardened concrete with No. 8 rebar constructed in double interlocking mats. Fluor Fernald engineers completed a model comparing the strength of the concrete with the strength and jaw opening of the site-owned shear and determined that the shear would not accomplish the demolition. Team members reviewed lessons learned from a previous demolition project where a 12", reinforced, above-grade concrete slab was successfully demolished utilizing a similar shear. It was determined that the demolition would proceed with the shear. However, as a contingency, if the shear was not successful, a requisition was prepared to rent a hoe ram for the following week. Midway through the demolition, the project team determined that the shear would accomplish the job and the requisition for the hoe ram was cancelled.

5.0 REFERENCES

U.S. Department of Energy, 1997, *Operable Unit 3 Integrated Remedial Design/Remedial Action Work Plan*, Final, prepared by Fluor Daniel Fernald, Cincinnati, Ohio

U.S. Department of Energy, 1998, *Operable Unit 3 Integrated Remedial Action Miscellaneous Small Structures Implementation Plan for Above-Grade Decontamination and Dismantlement*, Final, prepared by Fluor Daniel Fernald, Cincinnati, Ohio.